

Usability meets assessment:

Equal chances in education

Katja Weinerth & Vincent Koenig

Luxembourg, 10 November 2011



World Usability Day

Making life easy!



UNIVERSITY OF LUXEMBOURG
Educational Measurement and
Applied Cognitive Science (EMACS)

Overview

1

Context:
Assessment
& usability

2

Concrete
examples
& usability

3

Methodology:
How to
evaluate
usability



World Usability Day

Making life easy!

Content

1

Context:
Assessment
& usability

2

Concrete
examples
& usability

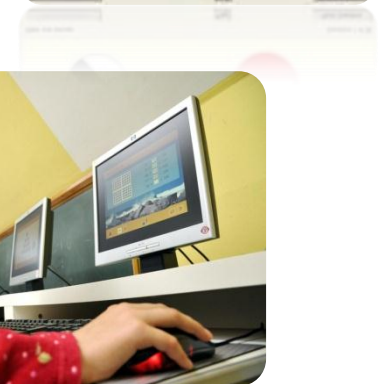
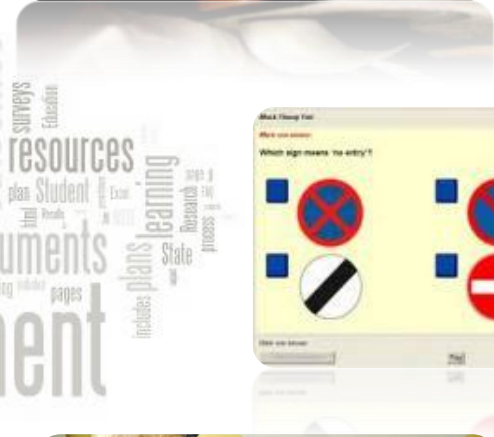
3

Methodology:
How to
evaluate
usability



World Usability Day

Making life easy!

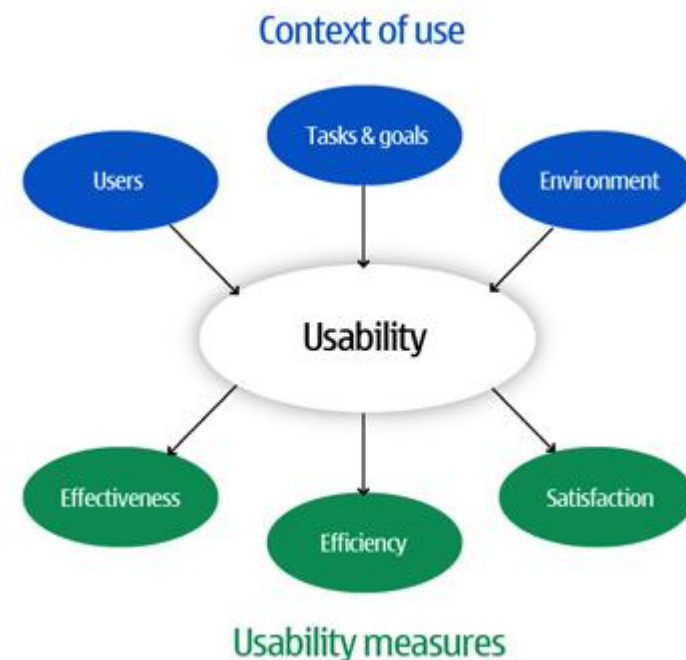


Making life easy!

Definition

ISO 9241-11 standard:

„the extent to which a product can be used by specified users to achieve specified goals with **effectiveness**, **efficiency** and **satisfaction** in a specified context of use“.



Lack of usability – possible situations and consequences for the test takers of computer-based assessments:



Failing of a **driving theory test** due to **misinterpretation** of function and design of the test.



The **human resources agency** may obtain a **different profile** of the skills of the job candidate.



A **student** may get a **low score** in a computer-based assessment.



Central objectives of our research project

- We suppose that, whenever people are **not able to interact** with the interface of a computer-based assessment adequately, they are **not able to** fully **demonstrate** his or her level of **proficiency**.
- Moreover, we expect that an **optimized** usability computer-based assessment instrument would **encourage** people to show their **actual level of proficiency**.
- **Removing** usability **barriers** supports accurate and objective assessment of proficiency and **equal chances** to work through the assessment.



Content

1

Context:
Assessment
& usability

2

Concrete
examples
& usability

3

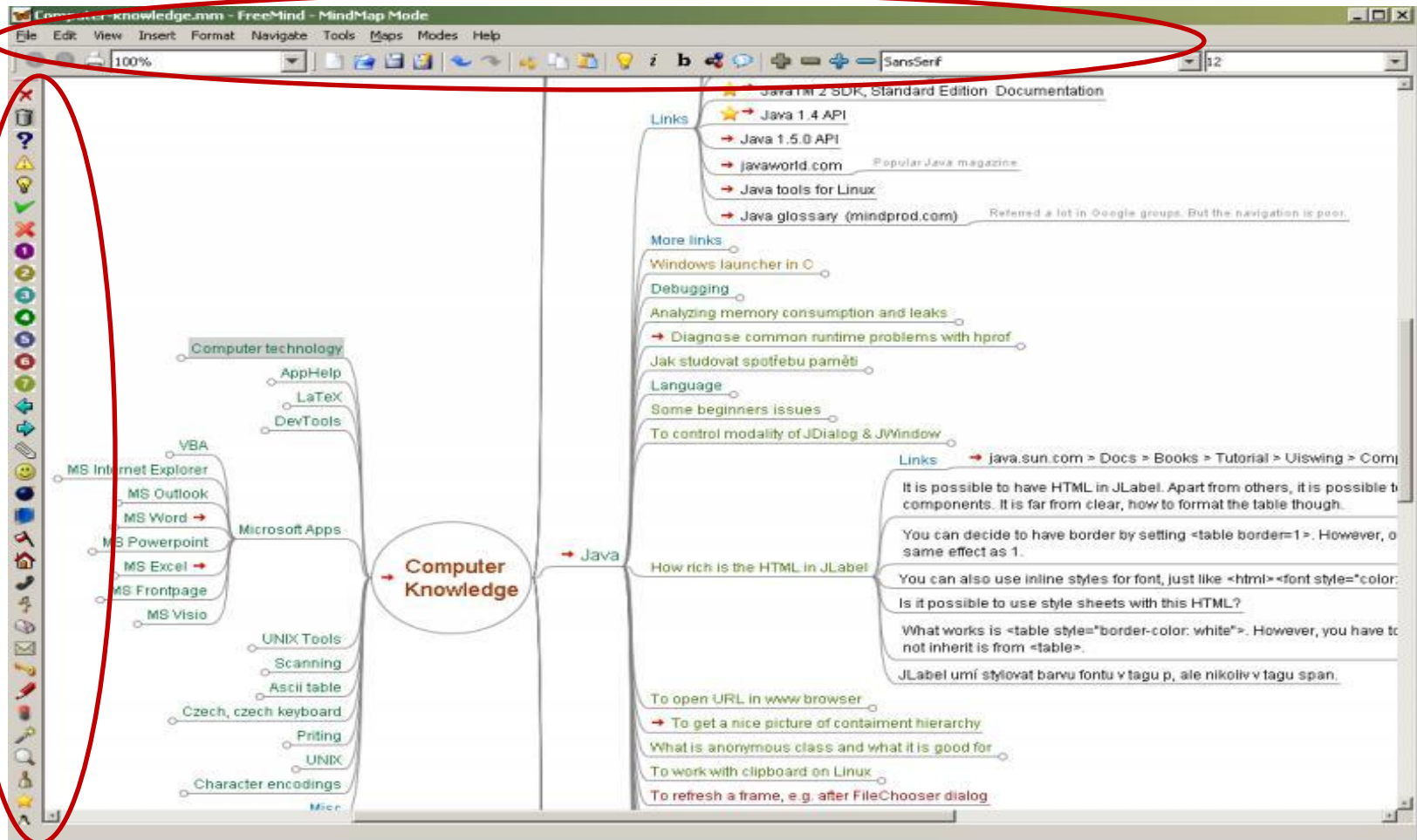
Methodology:
How to
evaluate
usability



World Usability Day

Making life easy!

Example 1: FreeMind

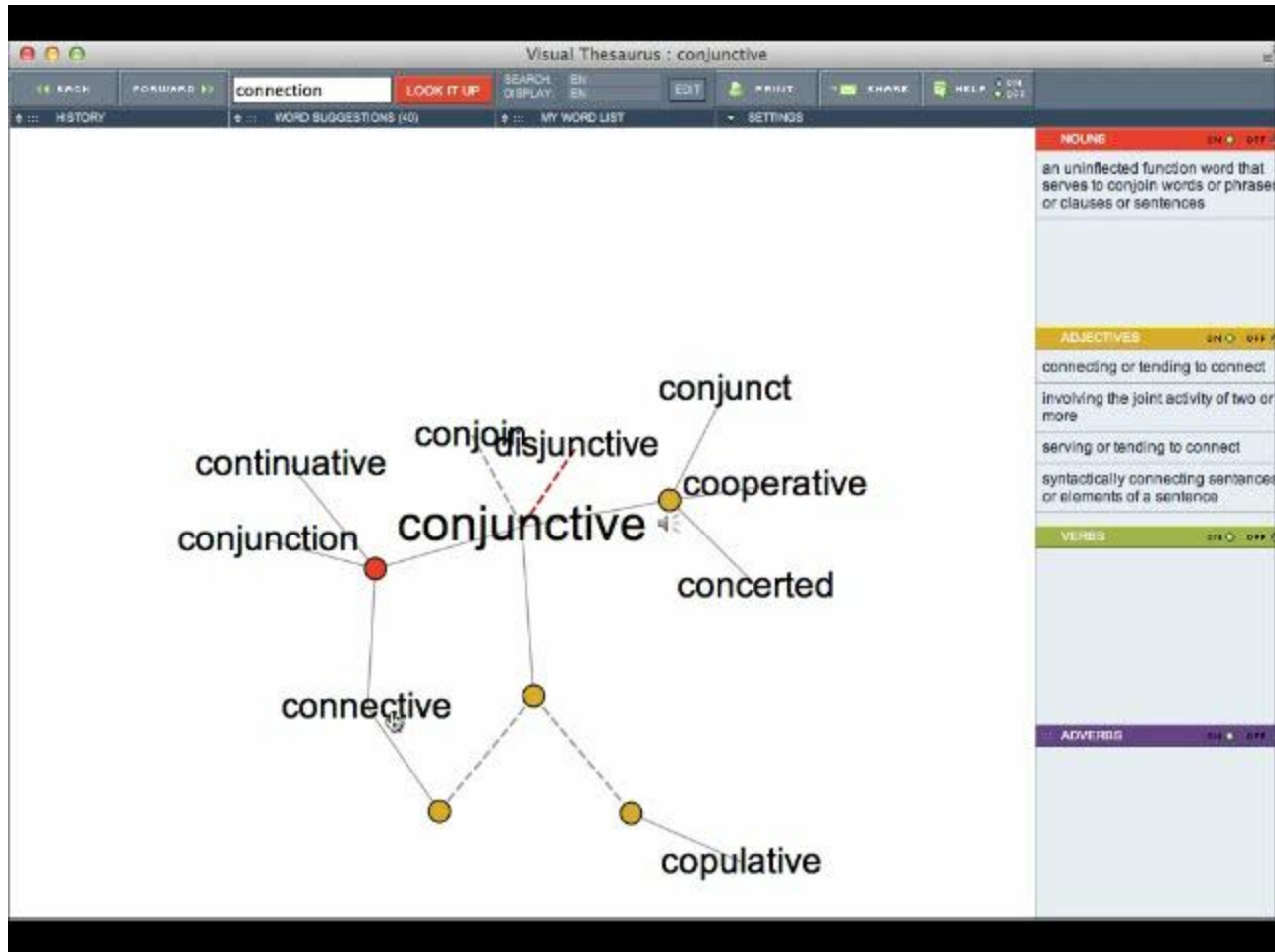


Example 2: Visual Thesaurus

The screenshot shows the Visual Thesaurus website in a Mozilla Firefox browser window. The browser's address bar displays the URL <http://www.visualthesaurus.com/app/view>. The browser's navigation bar includes buttons for BACK, FORWARD, and a search bar containing the word "Collection". To the right of the search bar are buttons for LOOK IT UP, EDIT, PRINT, SHARE, and HELP. Below the navigation bar, there are tabs for HISTORY, WORD SUGGESTIONS (40), MY WORD LIST, and SETTINGS. The main content area displays a word network for the word "collection". The central node is "collection", which is connected to several other nodes: "assemblage", "aggregation", "accumulation", "assembling", "collecting", "compendium", "collect", "solicitation", "ingathering", and "appeal". The sidebar on the right side of the page contains a list of word categories: NOUNS, ADJECTIVES, VERBS, and ADVERBS. The NOUNS category is currently selected and highlighted in red. The NOUNS section lists several definitions: "several things grouped together or considered as a whole", "a publication containing a variety of works", "request for a sum of money", and "the art of gathering something". The ADJECTIVES, VERBS, and ADVERBS sections are currently empty. A red oval is drawn around the browser's navigation bar and the sidebar.



Example 2: Visual Thesaurus



Content

1

Context:
Assessment
& usability

2

Concrete
examples
& usability

3

Methodology:
How to
evaluate
usability

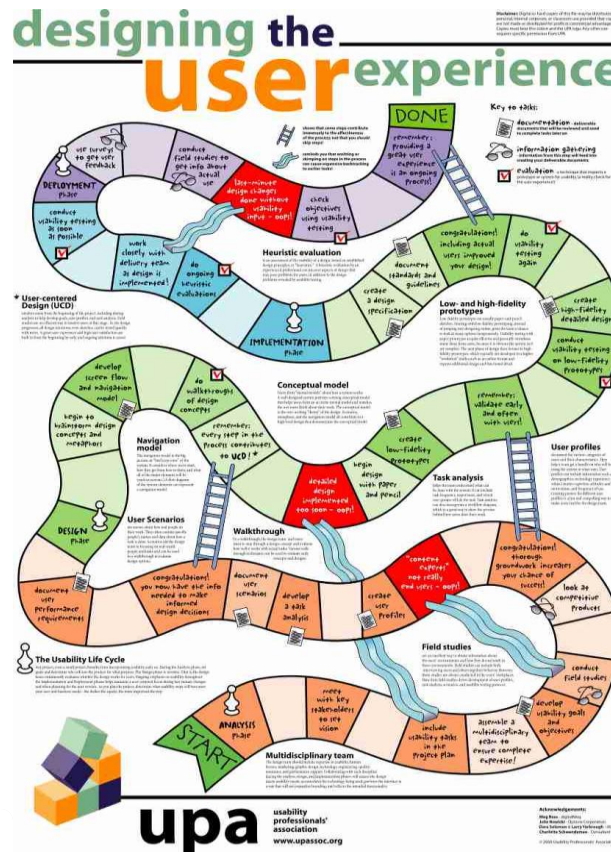


World Usability Day

Making life easy!

Iterative design and development workflow

Evaluation of the usability of the computer-based assessment application – somewhat inspired by the UPA „Usability Life Cycle“



World Usability Day

Making life easy!

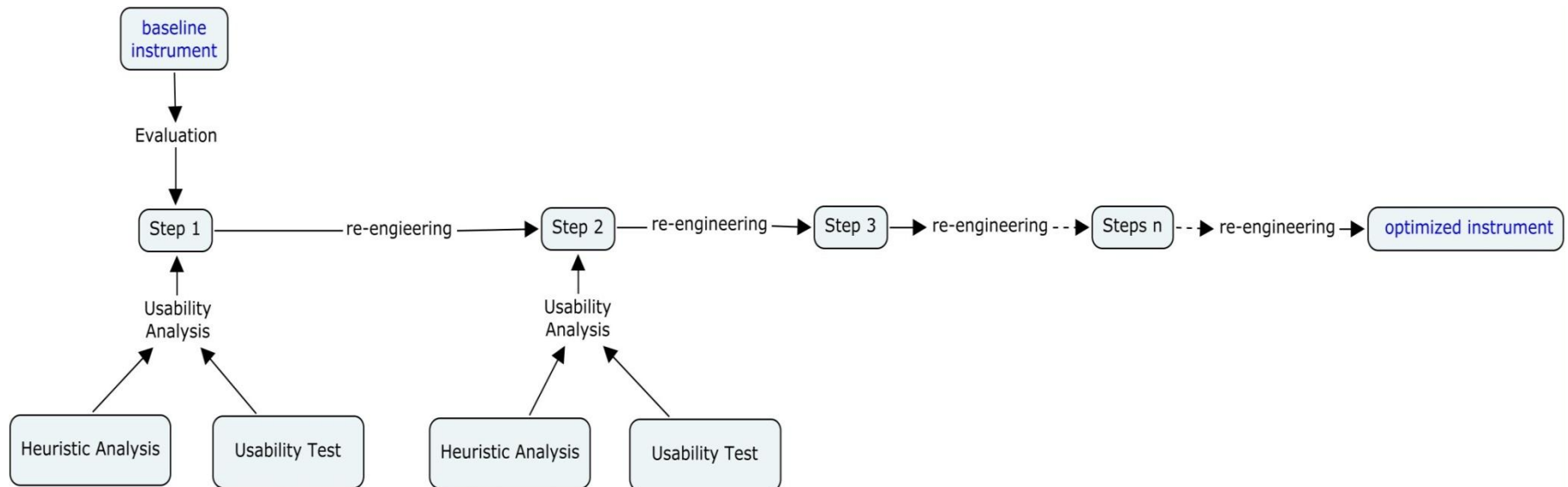
upa usability professionals' association
www.upassoc.org

Authors: stephen@stephenleong.com
Blog: stephenleong.com
Books: *Building a Scalable Web Application*
Other: *Software Engineer at Google*
Charitable: *Software Engineer at Google*

www.upassoc.org

Evaluation of the usability of the computer-based assessment application:

- Usability experts (Heuristic Analysis)
 - Student pilot studies (Usability Tests)
- } Results and feedback for re-engineering



The aim of the usability evaluation of the computer-based assessment application:

- Address the lack of usability
- Demonstrate and prove the impact of usability
- Verify the increase of usability
- Reduce barriers of interaction with the assessment instrument

➔ More **objective** and **valid measures** of proficiency

➔ **Equal chances** in computer-based assessments



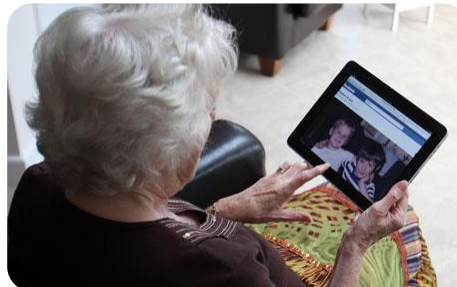
www.cts.umn.edu



www.atomicobject.com



www.conversionmedic.com



www.i.telegraph.co.uk



www.johnnyholland.org

Central objectives of our research project (Reminder)

- We suppose that, whenever people are **not able to interact** with the interface of a computer-based assessment adequately, they are **not able to** fully **demonstrate** his or her level of **proficiency**.
- Moreover, we expect that an **optimized** usability computer-based assessment instrument would **encourage** people to show their **actual level of proficiency**.
- **Removing** usability **barriers** supports accurate and objective assessment of proficiency and **equal chances** to work through the assessment.



Study 1: Development of instrument

- Development of an **optimized** computer-based assessment **instrument** with regard to **usability**.
- This will take place in our **Usability Lab**.



World Usability Day

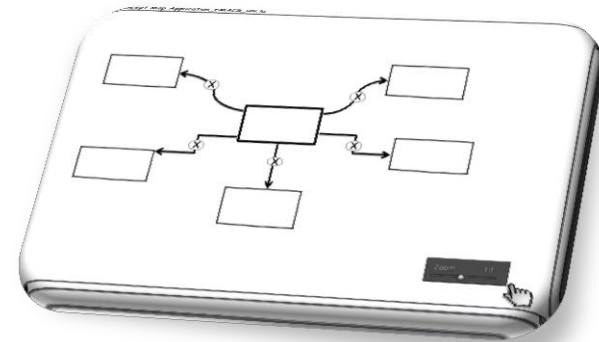
Making life easy!

Study 2: School study

- Evaluation and comparison of the two assessment instruments
 - ➔ Optimized vs. baseline (not optimized) version
 - ➔ A sample of 200 students will be randomly assigned
- We expect: students working with the **optimized version** will be able to demonstrate their knowledge with **higher effectiveness, efficiency and satisfaction**.



- Developing of the **computer-based assessment instrument**



- Preparing the **Usability Analysis** (Heuristic Analysis and Usability Test)
- Designing of **project homepage**
- Start **user testing** in December



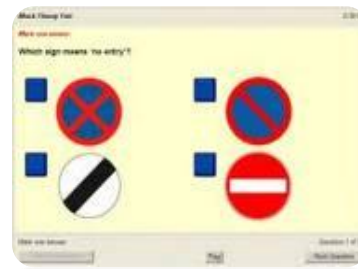
www.infodesign.com.au



World Usability Day

Making life easy!

- ➔ Shed light on the **relevance** and **impact of usability** for computer-based assessment.
- ➔ **Removing usability barriers** in computer-based assessment supports:
 - accurate and objective assessment of proficiency
 - equal chances



World Usability Day
Making life easy!

THANK YOU!

Contact:

katja.weinerth@uni.lu
vincent.koenig@uni.lu

1
Context:
Assessment
& usability

2
Concrete
examples
& usability

3
Methodology:
How to
evaluate
usability



UNIVERSITY OF LUXEMBOURG
Educational Measurement and
Applied Cognitive Science (EMACS)